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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/994,519	11/26/2001	James A. Crawford	70629	1390

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CHICAGO, IL 60603-3406

EXAMINER
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RAMOS FELICIANO, ELISEO

ART UNIT	PAPER NUMBER
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2687

DATE MAILED: 05/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/994,519

Applicant(s)

CRAWFORD ET AL.

Examiner

Eliseo Ramos-Feliciano

Art Unit

2687

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-75 is/are pending in the application.
- 4a) Of the above claim(s) 1-44 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 45-52, 54-68 and 70-75 is/are rejected.
- 7) ☒ Claim(s) 53 and 69 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 April 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 6/27/03; 5/6/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election of Group III (claims 45-75) in the reply filed on January 18, 2005 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### ***Drawings***

2. The drawings were received on April 15, 2002. These drawings are acceptable.

### ***Specification***

3. The disclosure is objected to because of the following informalities: the references in page 1, lines 10-12 to U.S. Patent Applications need to be updated as to indicate correct serial number and current status (pending, patented and Pat. No., abandoned). Correction is required.

### ***Information Disclosure Statement***

4. The references listed in the Information Disclosure Statement filed on 5/6/2004 (electronic), 5/6/2004 (paper), and 6/27/2003 have been considered by the examiner (see attached PTO-1449 form or PTO/SB/08A and 08B forms).

### ***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. **Claims 70 and 71** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

**Claims 70 and 71** recite the limitation "An apparatus in accordance with claim 61" in the first line of the claims. There is insufficient antecedent basis for this limitation in the claims. For examination on the merits the claims will be treated as reciting --An apparatus in accordance with claim 62-- instead.

### ***Double Patenting***

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. **Claims 45-51, 54-55, 57, 61-65, and 70-73** are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over *claims 5-6, 13-16, 22-23, 27-30, and 38 (as pending May 13, 2005) of copending Application No. 09/800,231*.

Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following reasons.

Regarding **claims 45-46, and 48-50** of present application, *claim 5* of copending Application No. 09/800,231, discloses everything claimed and some additional element(s) and its(their) function(s). Omission of element and its function in combination is obvious expedient if remaining elements perform same functions as before. In re KARLSON (CCPA) 136 USPQ 184 (1963).

Regarding **claim 47** of present application, *claim 13* of copending Application No. 09/800,231, further discloses everything claimed.

Regarding **claim 51** of present application, *claim 6* of copending Application No. 09/800,231, further discloses everything claimed.

Regarding **claims 54-55** of present application, *claims 14-15* of copending Application No. 09/800,231, further disclose everything claimed.

Regarding **claim 57** of present application, *claim 16* of copending Application No. 09/800,231, further discloses everything claimed.

Regarding **claim 61** of present application, *claim 38* of copending Application No. 09/800,231, discloses everything claimed and some additional element(s) and its(their) function(s). Omission of element and its function in combination is obvious expedient if remaining elements perform same functions as before. In re KARLSON (CCPA) 136 USPQ 184 (1963).

Regarding **claims 62-64** of present application, *claim 22* of copending Application No. 09/800,231, discloses everything claimed and some additional element(s) and its(their) function(s). Omission of element and its function in combination is obvious expedient if remaining elements perform same functions as before. In re KARLSON (CCPA) 136 USPQ 184 (1963).

Regarding **claim 65** of present application, *claim 23* of copending Application No. 09/800,231, further discloses everything claimed.

Regarding **claims 70-73** of present application, *claims 27-30* of copending Application No. 09/800,231, further disclose everything claimed.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. **Claims 45-46, 48-49, 52, 56-63, 66-68, and 70-75** are rejected under 35 U.S.C. 103(a) as being unpatentable over Pallonen (US Patent Number 6,408,169).

Regarding **claims 45 and 61**, Pallonen discloses a method and apparatus for performing diversity antenna selection. The method and apparatus includes (see Figure 1):

taking measurements and means for taking measurements of L different antenna branches (1-4), n antenna branches at a time (see abstract, and column 2, lines 59-67);

using and means for using the measurements to identify a group of n of the L different antenna branches that receive best possible signal based on signal quality BER (see abstract, and column 2, lines 45-58). The signal with the strongest strength RSSI (column 4, lines 42-45; column 6, lines 14-19; column 5, lines 57-61).

Even though Pallonen teaches a selection based on BER and RSSI (column 4, line 43), fails to specifically disclose minimizing an approximate bit error probability.

However, the best possible signal implies minimum BER for optimum communications. And using an approximate bit error probability instead of BER (bit error rate) would be desirable for reducing implementation costs.

Pallonen teaches that the signal is constructed from logical channels that read as the claimed “sub-carriers” in view of that the same Pallonen explains that these logical channels are portions of frequency channels that contain the signal (see column 8, lines 16-19).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to employ an approximate bit error probability instead of BER for the advantage of reducing implementation costs.

Regarding **claims 46, 48-49, and 52**, Pallonen discloses everything claimed as applied above (see claim 45). In addition, since the measurements include RSSI and the same is a measurement of signal power (power magnitude), the measurements include power measurements as claimed (see abstract). The BER is computed for each sub-carrier for each L antenna branches, n antenna branches at a time (abstract). Different groupings are formed and selected based on the minimum BER (column 4, lines 42-45). As shown in Figure 1, the BER are multiplexed corresponding to n antenna branches. Pallonen further discloses that in addition to signal level measurements, statistics (detection statistic) are calculated as claimed (column 9, lines 10-19).

Regarding **claims 56 and 60**, Pallonen discloses everything claimed as applied above (see claims 45, 52). In addition, Pallonen teaches that the detection statistic is based on signal quality (column 9, lines 10-19). However, Pallonen fails to specify that the detection statistic is based on CNIR as claimed. Nevertheless, it should be recognized that CNIR describes signal quality. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to base the detection statistic in CNIR because this would bring more accurate results.

Regarding **claims 57-59**, Pallonen discloses everything claimed as applied above (see claim 45). In addition, the output signal is constructed from the sub-carriers that are received by any one of the  $n$  antenna branches as claimed. Pallonen further discloses that in addition to signal level measurements, statistics (detection statistic) are calculated as claimed (column 9, lines 10-19). The rest of the limitations have been treated above. Explanation and citations above is incorporated herein.

As to **claims 62-63, 66-68 and 70-75**, they are obvious apparatus structure claims of method claims discussed above. Therefore, same rejections explained above are applied. See Figure 1.

11. **Claims 47, and 54-55** are rejected under 35 U.S.C. 103(a) as being unpatentable over Pallonen (US Patent Number 6,408,169) in view of the Admitted Prior Art (Figure 4 and page 15, last paragraph, of the present disclosure).

Regarding **claims 47, and 54**, Pallonen discloses everything claimed as applied above (see claims 45, 46). However, Pallonen fails to specifically disclose OFDM as claimed.

The prior art admitted by applicant and exhibited in Figure 4 and page 15, last paragraph, of the present specification (hereinafter simply referred as the Admitted Prior Art) teaches frame structure 300 for radio frequency (RF) communications that is a standard of communications, and includes a diversity selection portion (part of 306) comprising one or more antenna branch probing portions; see Figure 4 and page 12, lines 1-20 of the present specification. The technology is OFDM as claimed.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Admitted Prior Art' frame as claimed because it is a standard of



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communications. OFDM technology has the further advantage of increased communication capacity.

Regarding **claim 55**, Pallonen discloses everything claimed as applied above (see claim 54). In addition, Pallonen teaches that the measurements are taken with separate RF receivers (9, 10); see Figure 1.

***Allowable Subject Matter***

12. **Claims 53 and 69** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

**Claims 53 and 69** would be allowable if rewritten in independent form as explained above because the prior art of record fails to anticipate or render obvious the claimed *Q-function* limitation, in combination with all other limitations in the claim(s).

***Conclusion***

13. Any inquiry concerning this communication from the examiner should be directed to Eliseo Ramos-Feliciano whose telephone number is 571-272-7925. The examiner can normally be reached from 8:00 a.m. to 5:30 p.m. on 5-4/9 1st Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester G. Kincaid, can be reached on (571) 272-7922. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ERF/erf  
May 14, 2005

  
**ELISEO RAMOS-FELICIANO**  
**PATENT EXAMINER**